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EXAMINER	
PHILPOTT, JUSTIN M	
ART UNIT	**PAPER NUMBER**
2616	

DATE MAILED: 04/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/829,314	Applicant(s) DZIK, STEVEN C.	
	Examiner Justin M. Philpott	Art Unit 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-35* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed February 3, 2006 have been considered but are moot in view of the new ground(s) of rejection. Specifically, applicant's arguments that the newly added limitations to independent claims 1, 13 and 25-27 are not taught by the previously cited art of Kwan or Vargo are moot since the newly cited art of McClary et al. teaches the limitations as discussed in the following office action detailing the new grounds of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication No. US 2003/0112796 by Kwan in view of U.S. Patent No. 6,356,545 to Vargo et al., further in view of U.S. Patent Application Publication No. US 2003/0016699 A1 by McClary et al.

Regarding claim 1, Kwan teaches a method of processing a sequence of audio samples, each of the samples being stored within a respective packet, the method comprising: retrieving a first packet from an input buffer (e.g., see paragraph 0227 regarding generating voice parameters based upon buffered voice samples), the first packet implicitly having an associated length;

determining pitch associated with audio information contained within the first packet (e.g., see paragraph 0230 regarding calculating the pitch associated with the voice sample); determining whether a second packet of the audio information has arrived at the input buffer (e.g., see paragraph 0228 regarding experiencing a loss of a subsequent packet containing voice samples), the second packet implicitly having an expected arrival time (e.g., see paragraph 0224 regarding packet arriving too late); and adjusting the first packet using at least the pitch (e.g., see paragraphs 0243-0252 regarding pitch period and voicing calculation and paragraphs 0223-0242 regarding determining when the subsequent packet is lost, or not timely arrived). However, Kwan may not specifically disclose adjusting the length of a first packet using at least one pitch period associated with the pitch of the first packet in response to an arrival time.

Vargo, like Kwan, teaches a method of processing audio samples (e.g., see abstract), and further, teaches adjusting the length of a packet (e.g., see col. 7, lines 6-26 regarding varying the packet size; see also col. 11, lines 34-47 regarding stretching the data remaining in the buffer for packet transmission) using at least one pitch period associated with the pitch of the previous packet (e.g., see col. 11, lines 47-52 regarding stretching without changing pitch with respect to the previous packet). Further, Vargo teaches varying the size of packets may also be according to techniques that are well known in the art (e.g., see col. 11, lines 20-23). Additionally, the teachings of Vargo provide improved speech quality and maintaining consistent pitch and delay-free voice transmission (e.g., see col. 2, lines 49-63). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the audio processing teachings of Vargo to the audio processing method of Kwan in order to provide improved speech quality and

maintaining consistent pitch and delay-free voice transmission. However, Vargo may not specifically disclose the adjusting is in response to an arrival time.

McClary, like both Kwan and Vargo, teaches a method of processing audio packets (e.g., see paragraphs 0003-0014), and further, teaches time adjustment is according to timing information of the arrival time of the packets (e.g., see paragraph 0078). Additionally, McClary teaches time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see paragraph 0078). As discussed above, Vargo encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) and, like McClary, also teaches time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078). Accordingly, at the time of the invention it would have been obvious to one of ordinary skill in the art to adjust the length of packets in Vargo (e.g., see Vargo, col. 7, lines 6-26 and col. 11, lines 34-47) according to timing information of the arrival time of the packets as taught by McClary (e.g., see McClary, paragraph 0078) since Vargo specifically encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) such as in McClary. Still further, one of ordinary skill in the art would be further motivated to turn to the teachings of McClary for providing such a well known time adjustment teaching since both Vargo and McClary additionally share a common focus of time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078). Accordingly, the combined teachings of Kwan in view of Vargo, further in view of McClary teach adjusting a current packet (e.g., see Kwan, paragraphs 0243-0252 regarding pitch period and voicing calculation and paragraphs 0223-0242 regarding determining

when the subsequent packet is lost, or not timely arrived) according to the adjusted length of a prior packet (e.g., see Vargo, col. 7, lines 6-26 regarding varying the packet size; see also col. 11, lines 34-47 regarding stretching the data remaining in the buffer for packet transmission) and an arrival time of a subsequent packet (e.g., see McClary, paragraph 0078), and making the adjustment in response to the actual and expected arrival time (e.g., see McClary, paragraph 0078 regarding "adjusted according to timing information inferred from the arrival time of the packets").

Regarding claim 2, Kwan teaches adjusting comprises processing at least two pitch periods to produce a new pitch period (e.g., see paragraphs 0243-0252 regarding calculating pitch periods over a range of pitch values).

Regarding claim 3, Kwan teaches the new pitch period replaces the at least two adjacent periods (e.g., see paragraphs 0267-0268 wherein replacement may occur for more than one lost packet).

Regarding claim 4, Kwan teaches the new pitch period is inserted between two of at least two adjacent periods (e.g., see paragraph 0268).

Regarding claim 5, Vargo teaches determining the length of a second (e.g., see col. 7, lines 6-26 regarding varying the packet size; see also col. 11, lines 34-47 regarding stretching the data remaining in the buffer for packet transmission). As discussed above, the teachings of Vargo provide improved speech quality and maintaining consistent pitch and delay-free voice transmission (e.g., see col. 2, lines 49-63). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the audio processing teachings of Vargo to the

audio processing method of Kwan in order to provide improved speech quality and maintaining consistent pitch and delay-free voice transmission.

Regarding claim 6, McClary teaches determining an estimated time of arrival of a third packet (e.g., see paragraph 0078 regarding "adjusted according to timing information inferred from the arrival time of the packets"). As discussed above, the teachings of Vargo provide improved speech quality and maintaining consistent pitch and delay-free voice transmission (e.g., see col. 2, lines 49-63). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the audio processing teachings of Vargo to the audio processing method of Kwan in order to provide improved speech quality and maintaining consistent pitch and delay-free voice transmission. Also as discussed above, Vargo encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) and, like McClary, also teaches time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078). Accordingly, at the time of the invention it would have been obvious to one of ordinary skill in the art to adjust the length of packets in Vargo (e.g., see Vargo, col. 7, lines 6-26 and col. 11, lines 34-47) according to timing information of the arrival time of the packets as taught by McClary (e.g., see McClary, paragraph 0078) since Vargo specifically encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) such as in McClary. Still further, one of ordinary skill in the art would be further motivated to turn to the teachings of McClary for providing such a well known time adjustment teaching since both Vargo and McClary additionally share a common focus of time adjustment according

to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078).

Regarding claim 7, Kwan teaches a target play time comprises the ETA and a latency period of a third packet (e.g., see paragraphs 0217-0218 regarding target hold times and isochronous transmission).

Regarding claim 8, Kwan in view of Vargo, further in view of McClary teaches the method discussed above regarding claim 5, and further, McClary teaches the length of the second packet is reduced in response to a timely arrival of a third packet at the input buffer (e.g., see McClary paragraph 0078 regarding "adjusted according to timing information inferred from the arrival time of the packets"). As discussed above, the teachings of Vargo provide improved speech quality and maintaining consistent pitch and delay-free voice transmission (e.g., see col. 2, lines 49-63). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the audio processing teachings of Vargo to the audio processing method of Kwan in order to provide improved speech quality and maintaining consistent pitch and delay-free voice transmission. Also as discussed above, Vargo encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) and, like McClary, also teaches time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078). Accordingly, at the time of the invention it would have been obvious to one of ordinary skill in the art to adjust the length of packets in Vargo (e.g., see Vargo, col. 7, lines 6-26 and col. 11, lines 34-47) according to timing information of the arrival time of the packets as taught by McClary (e.g., see McClary, paragraph 0078) since Vargo specifically encourages utilizing techniques that are well known in

the art for time adjustment (e.g., see col. 11, lines 20-23) such as in McClary. Still further, one of ordinary skill in the art would be further motivated to turn to the teachings of McClary for providing such a well known time adjustment teaching since both Vargo and McClary additionally share a common focus of time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078).

Regarding claim 9, Kwan teaches the length of a second packet is not reduced by a factor greater than two (e.g., see Kwan paragraph 0220 regarding decreasing the holding time by transferring only one of the voice frames to the media queue).

Regarding claim 10, Kwan teaches the length of the second packet is reduced by deleting at least one pitch period of a plurality of pitch periods contained within audio information of the second packet (e.g., see paragraph 0244-0253, 0258 and 0268 regarding stretching pitch periods to cover gaps in time due to lost packets, whereby a pitch period is deleted).

Regarding claim 11, Kwan teaches the length of a second packet is expanded if a third packet arrives during the latency period associated with the third packet (e.g., see paragraph 0228 regarding elapsing of a timeout period).

Regarding claim 12, Kwan teaches the length of a second packet is adjusted to compensate for adjustments of the length of the first packet (e.g., see paragraph 0228, 0244-0252, 0258 and 0268 regarding determining a pitch period, and synthesizing voice based on the pitch period).

Regarding claim 13, Kwan teaches an apparatus comprising: a first VoIP gateway (e.g., see paragraph 0077 regarding gateway and the system comprising VoIP) for retrieving a first

packet from an input buffer, the packet implicitly having an associated length; the first VoIP gateway (e.g., see paragraph 0077) determining pitch associated with audio information contained within the first packet (e.g., see paragraph 0230 regarding calculating the pitch associated with the voice sample); the first VOIP gateway determining whether a second packet of the audio information has arrived at the input buffer (e.g., see paragraph 0228 regarding experiencing a loss of a subsequent packet containing voice samples). However, as discussed above regarding claim 1, Kwan may not specifically disclose adjusting the length of a first packet using at least one pitch period associated with the pitch of the first packet in response to an arrival time.

Vargo, like Kwan, teaches a method of processing audio samples (e.g., see abstract), and further, teaches adjusting the length of a packet (e.g., see col. 7, lines 6-26 regarding varying the packet size; see also col. 11, lines 34-47 regarding stretching the data remaining in the buffer for packet transmission) using at least one pitch period associated with the pitch of the previous packet (e.g., see col. 11, lines 47-52 regarding stretching without changing pitch with respect to the previous packet). Further, Vargo teaches varying the size of packets may also be according to techniques that are well known in the art (e.g., see col. 11, lines 20-23). Additionally, the teachings of Vargo provide improved speech quality and maintaining consistent pitch and delay-free voice transmission (e.g., see col. 2, lines 49-63). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the audio processing teachings of Vargo to the audio processing method of Kwan in order to provide improved speech quality and maintaining consistent pitch and delay-free voice transmission. However, Vargo may not specifically disclose the adjusting is in response to an arrival time.

McClary, like both Kwan and Vargo, teaches a method of processing audio packets (e.g., see paragraphs 0003-0014), and further, teaches time adjustment is according to timing information of the arrival time of the packets (e.g., see paragraph 0078). Additionally, McClary teaches time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see paragraph 0078). As discussed above, Vargo encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) and, like McClary, also teaches time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078). Accordingly, at the time of the invention it would have been obvious to one of ordinary skill in the art to adjust the length of packets in Vargo (e.g., see Vargo, col. 7, lines 6-26 and col. 11, lines 34-47) according to timing information of the arrival time of the packets as taught by McClary (e.g., see McClary, paragraph 0078) since Vargo specifically encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) such as in McClary. Still further, one of ordinary skill in the art would be further motivated to turn to the teachings of McClary for providing such a well known time adjustment teaching since both Vargo and McClary additionally share a common focus of time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078). Accordingly, the combined teachings of Kwan in view of Vargo, further in view of McClary teach adjusting a current packet (e.g., see Kwan, paragraphs 0243-0252 regarding pitch period and voicing calculation and paragraphs 0223-0242 regarding determining when the subsequent packet is lost, or not timely arrived) according to the adjusted length of a prior packet (e.g., see Vargo, col. 7, lines 6-26 regarding varying the packet size; see also col. 11,

lines 34-47 regarding stretching the data remaining in the buffer for packet transmission) and an arrival time of a subsequent packet (e.g., see McClary, paragraph 0078), and making the adjustment in response to the actual and expected arrival time (e.g., see McClary, paragraph 0078 regarding "adjusted according to timing information inferred from the arrival time of the packets").

Regarding claim 14, Kwan teaches the adjusting comprises processing at least two adjacent pitch periods to produce a new pitch period (e.g., see paragraphs 0243-0252 regarding calculating pitch periods over a range of pitch values).

Regarding claim 15, Kwan teaches the new pitch period replaces the at least two adjacent pitch periods (e.g., see paragraphs 0267-0268 wherein replacement may occur for more than one lost packet).

Regarding claim 16, Kwan teaches the new pitch period is inserted between two of at least two adjacent periods (e.g., see paragraph 0268).

Regarding claim 17, as discussed above regarding claim 5, Vargo teaches determining the length of a second (e.g., see col. 7, lines 6-26 regarding varying the packet size; see also col. 11, lines 34-47 regarding stretching the data remaining in the buffer for packet transmission). As discussed above, the teachings of Vargo provide improved speech quality and maintaining consistent pitch and delay-free voice transmission (e.g., see col. 2, lines 49-63). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the audio processing teachings of Vargo to the audio processing method of Kwan in order to provide improved speech quality and maintaining consistent pitch and delay-free voice transmission.

Regarding claim 18, as discussed above regarding claim 6, McClary teaches determining an estimated time of arrival of a third packet (e.g., see paragraph 0078 regarding "adjusted according to timing information inferred from the arrival time of the packets"). As discussed above, the teachings of Vargo provide improved speech quality and maintaining consistent pitch and delay-free voice transmission (e.g., see col. 2, lines 49-63). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the audio processing teachings of Vargo to the audio processing method of Kwan in order to provide improved speech quality and maintaining consistent pitch and delay-free voice transmission. Also as discussed above, Vargo encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) and, like McClary, also teaches time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078). Accordingly, at the time of the invention it would have been obvious to one of ordinary skill in the art to adjust the length of packets in Vargo (e.g., see Vargo, col. 7, lines 6-26 and col. 11, lines 34-47) according to timing information of the arrival time of the packets as taught by McClary (e.g., see McClary, paragraph 0078) since Vargo specifically encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) such as in McClary. Still further, one of ordinary skill in the art would be further motivated to turn to the teachings of McClary for providing such a well known time adjustment teaching since both Vargo and McClary additionally share a common focus of time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078).

Regarding claim 19, as discussed above regarding claim 7, Kwan teaches a target play time comprises the ETA and a latency period of a third packet (e.g., see paragraphs 0217-0218 regarding target hold times and isochronous transmission).

Regarding claim 20, as discussed above regarding claim 8, Kwan in view of Vargo, further in view of McClary teaches the method discussed above regarding claim 5, and further, McClary teaches the length of the second packet is reduced in response to a timely arrival of a third packet at the input buffer (e.g., see McClary paragraph 0078 regarding "adjusted according to timing information inferred from the arrival time of the packets"). As discussed above, the teachings of Vargo provide improved speech quality and maintaining consistent pitch and delay-free voice transmission (e.g., see col. 2, lines 49-63). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the audio processing teachings of Vargo to the audio processing method of Kwan in order to provide improved speech quality and maintaining consistent pitch and delay-free voice transmission. Also as discussed above, Vargo encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) and, like McClary, also teaches time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078). Accordingly, at the time of the invention it would have been obvious to one of ordinary skill in the art to adjust the length of packets in Vargo (e.g., see Vargo, col. 7, lines 6-26 and col. 11, lines 34-47) according to timing information of the arrival time of the packets as taught by McClary (e.g., see McClary, paragraph 0078) since Vargo specifically encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) such as in McClary. Still further, one of ordinary skill in the art would be

further motivated to turn to the teachings of McClary for providing such a well known time adjustment teaching since both Vargo and McClary additionally share a common focus of time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078).

Regarding claim 21, as discussed above regarding claim 9, Kwan teaches the length of a second packet is not reduced by a factor greater than two (e.g., see Kwan paragraph 0220 regarding decreasing the holding time by transferring only one of the voice frames to the media queue)..

Regarding claim 22, as discussed above regarding claim 10, Kwan teaches the length of the second packet is reduced by deleting at least one pitch period of a plurality of pitch periods contained within audio information of the second packet (e.g., see paragraph 0244-0253, 0258 and 0268 regarding stretching pitch periods to cover gaps in time due to lost packets, whereby a pitch period is deleted).

Regarding claim 23, as discussed above regarding claim 11, Kwan teaches the length of a second packet is expanded if a third packet arrives during the latency period associated with the third packet (e.g., see paragraph 0228 regarding elapsing of a timeout period).

Regarding claim 24, as discussed above regarding claim 12, Kwan teaches the length of a second packet is adjusted to compensate for adjustments of the length of the first packet (e.g., see paragraph 0228, 0244-0252, 0258 and 0268 regarding determining a pitch period, and synthesizing voice based on the pitch period).

Regarding claim 25, Kwan teaches an apparatus for expanding and reducing audio information within packets, comprising: a processor (e.g., selector 196 within lost packet

recovery engine, see paragraph 0226 and FIG. 12); and a storage device (e.g., voice analyzer 192, see paragraph 0227) coupled (e.g., via 194) to the processor (e.g., selector 196 within lost packet recovery engine, see paragraph 0226 and FIG. 12) for controlling the processor, the processor comprising instructions operative to: retrieve a first packet from an input buffer (e.g., see paragraph 0227 regarding generating voice parameters based upon buffered voice samples), the first packet implicitly having an associated length; determine pitch associated with audio information contained within the first packet (e.g., see paragraph 0230 regarding calculating the pitch associated with the voice sample); determine whether a second packet of the audio information has arrived at the input buffer (e.g., see paragraph 0228 regarding experiencing a loss of a subsequent packet containing voice samples), the second packet implicitly having an expected arrival time (e.g., see paragraph 0224 regarding packet arriving too late); and adjusting the first packet using at least the pitch (e.g., see paragraphs 0243-0252 regarding pitch period and voicing calculation and paragraphs 0223-0242 regarding determining when the subsequent packet is lost, or not timely arrived). However, as discussed above regarding claims 1 and 13, Kwan may not specifically disclose adjusting the length of a first packet using at least one pitch period associated with the pitch of the first packet in response to an arrival time.

Vargo, like Kwan, teaches a method of processing audio samples (e.g., see abstract), and further, teaches adjusting the length of a packet (e.g., see col. 7, lines 6-26 regarding varying the packet size; see also col. 11, lines 34-47 regarding stretching the data remaining in the buffer for packet transmission) using at least one pitch period associated with the pitch of the previous packet (e.g., see col. 11, lines 47-52 regarding stretching without changing pitch with respect to the previous packet). Further, Vargo teaches varying the size of packets may also be according

to techniques that are well known in the art (e.g., see col. 11, lines 20-23). Additionally, the teachings of Vargo provide improved speech quality and maintaining consistent pitch and delay-free voice transmission (e.g., see col. 2, lines 49-63). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the audio processing teachings of Vargo to the audio processing method of Kwan in order to provide improved speech quality and maintaining consistent pitch and delay-free voice transmission. However, Vargo may not specifically disclose the adjusting is in response to an arrival time.

McClary, like both Kwan and Vargo, teaches a method of processing audio packets (e.g., see paragraphs 0003-0014), and further, teaches time adjustment is according to timing information of the arrival time of the packets (e.g., see paragraph 0078). Additionally, McClary teaches time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see paragraph 0078). As discussed above, Vargo encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) and, like McClary, also teaches time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078). Accordingly, at the time of the invention it would have been obvious to one of ordinary skill in the art to adjust the length of packets in Vargo (e.g., see Vargo, col. 7, lines 6-26 and col. 11, lines 34-47) according to timing information of the arrival time of the packets as taught by McClary (e.g., see McClary, paragraph 0078) since Vargo specifically encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) such as in McClary. Still further, one of ordinary skill in the art would be further motivated to turn to the teachings of McClary for providing such a well known time adjustment teaching since both Vargo and McClary

additionally share a common focus of time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078). Accordingly, the combined teachings of Kwan in view of Vargo, further in view of McClary teach adjusting a current packet (e.g., see Kwan, paragraphs 0243-0252 regarding pitch period and voicing calculation and paragraphs 0223-0242 regarding determining when the subsequent packet is lost, or not timely arrived) according to the adjusted length of a prior packet (e.g., see Vargo, col. 7, lines 6-26 regarding varying the packet size; see also col. 11, lines 34-47 regarding stretching the data remaining in the buffer for packet transmission) and an arrival time of a subsequent packet (e.g., see McClary, paragraph 0078), and making the adjustment in response to the actual and expected arrival time (e.g., see McClary, paragraph 0078 regarding "adjusted according to timing information inferred from the arrival time of the packets").

Regarding claim 26, Kwan teaches computer readable medium having stored thereon a plurality of instructions including instructions which, when executed by a processor (e.g., selector 196 within lost packet recovery engine, see paragraph 0226 and FIG. 12), ensures the processor to perform a method comprising: retrieving a first packet from an input buffer (e.g., see paragraph 0227 regarding generating voice parameters based upon buffered voice samples), the first packet implicitly having an associated length; determining pitch associated with audio information contained within the packet (e.g., see paragraph 0230 regarding calculating the pitch associated with the voice sample), the second packet implicitly having an expected arrival time (e.g., see paragraph 0224 regarding packet arriving too late); and adjusting the first packet using at least the pitch (e.g., see paragraphs 0243-0252 regarding pitch period and voicing calculation

and paragraphs 0223-0242 regarding determining when the subsequent packet is lost, or not timely arrived). However, as discussed above regarding claims 1, 13 and 25, Kwan may not specifically disclose adjusting the length of a first packet using at least one pitch period associated with the pitch of the first packet in response to an arrival time.

Vargo, like Kwan, teaches a method of processing audio samples (e.g., see abstract), and further, teaches adjusting the length of a packet (e.g., see col. 7, lines 6-26 regarding varying the packet size; see also col. 11, lines 34-47 regarding stretching the data remaining in the buffer for packet transmission) using at least one pitch period associated with the pitch of the previous packet (e.g., see col. 11, lines 47-52 regarding stretching without changing pitch with respect to the previous packet). Further, Vargo teaches varying the size of packets may also be according to techniques that are well known in the art (e.g., see col. 11, lines 20-23). Additionally, the teachings of Vargo provide improved speech quality and maintaining consistent pitch and delay-free voice transmission (e.g., see col. 2, lines 49-63). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the audio processing teachings of Vargo to the audio processing method of Kwan in order to provide improved speech quality and maintaining consistent pitch and delay-free voice transmission. However, Vargo may not specifically disclose the adjusting is in response to an arrival time.

McClary, like both Kwan and Vargo, teaches a method of processing audio packets (e.g., see paragraphs 0003-0014), and further, teaches time adjustment is according to timing information of the arrival time of the packets (e.g., see paragraph 0078). Additionally, McClary teaches time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see paragraph 0078). As discussed above, Vargo encourages utilizing techniques that are

well known in the art for time adjustment (e.g., see col. 11, lines 20-23) and, like McClary, also teaches time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078). Accordingly, at the time of the invention it would have been obvious to one of ordinary skill in the art to adjust the length of packets in Vargo (e.g., see Vargo, col. 7, lines 6-26 and col. 11, lines 34-47) according to timing information of the arrival time of the packets as taught by McClary (e.g., see McClary, paragraph 0078) since Vargo specifically encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) such as in McClary. Still further, one of ordinary skill in the art would be further motivated to turn to the teachings of McClary for providing such a well known time adjustment teaching since both Vargo and McClary additionally share a common focus of time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078). Accordingly, the combined teachings of Kwan in view of Vargo, further in view of McClary teach adjusting a current packet (e.g., see Kwan, paragraphs 0243-0252 regarding pitch period and voicing calculation and paragraphs 0223-0242 regarding determining when the subsequent packet is lost, or not timely arrived) according to the adjusted length of a prior packet (e.g., see Vargo, col. 7, lines 6-26 regarding varying the packet size; see also col. 11, lines 34-47 regarding stretching the data remaining in the buffer for packet transmission) and an arrival time of a subsequent packet (e.g., see McClary, paragraph 0078), and making the adjustment in response to the actual and expected arrival time (e.g., see McClary, paragraph 0078 regarding "adjusted according to timing information inferred from the arrival time of the packets").

Regarding claim 27, Kwan discloses retrieving a first packet from an input buffer (e.g., see paragraph 0227 regarding generating voice parameters based upon buffered voice samples); determining a pitch within audio samples for the retrieved packet (e.g., see paragraph 0230 regarding calculating the pitch associated with the voice sample); and adjusting the first packet using at least the pitch (e.g., see paragraphs 0243-0252 regarding pitch period and voicing calculation and paragraphs 0223-0242 regarding determining when the subsequent packet is lost, or not timely arrived). However, as discussed above regarding claims 1, 13, 25 and 26, Kwan may not specifically disclose adjusting the length of a first packet using at least one pitch period associated with the pitch of the first packet in response to an arrival time.

Vargo, like Kwan, teaches a method of processing audio samples (e.g., see abstract), and further, teaches adjusting the length of a packet (e.g., see col. 7, lines 6-26 regarding varying the packet size; see also col. 11, lines 34-47 regarding stretching the data remaining in the buffer for packet transmission) using at least one pitch period associated with the pitch of the previous packet (e.g., see col. 11, lines 47-52 regarding stretching without changing pitch with respect to the previous packet). Further, Vargo teaches varying the size of packets may also be according to techniques that are well known in the art (e.g., see col. 11, lines 20-23). Additionally, the teachings of Vargo provide improved speech quality and maintaining consistent pitch and delay-free voice transmission (e.g., see col. 2, lines 49-63). Thus, at the time of the invention it would have been obvious to one of ordinary skill in the art to apply the audio processing teachings of Vargo to the audio processing method of Kwan in order to provide improved speech quality and maintaining consistent pitch and delay-free voice transmission. However, Vargo may not specifically disclose the adjusting is in response to an arrival time.

McClary, like both Kwan and Vargo, teaches a method of processing audio packets (e.g., see paragraphs 0003-0014), and further, teaches time adjustment is according to timing information of the arrival time of the packets (e.g., see paragraph 0078). Additionally, McClary teaches time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see paragraph 0078). As discussed above, Vargo encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) and, like McClary, also teaches time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078). Accordingly, at the time of the invention it would have been obvious to one of ordinary skill in the art to adjust the length of packets in Vargo (e.g., see Vargo, col. 7, lines 6-26 and col. 11, lines 34-47) according to timing information of the arrival time of the packets as taught by McClary (e.g., see McClary, paragraph 0078) since Vargo specifically encourages utilizing techniques that are well known in the art for time adjustment (e.g., see col. 11, lines 20-23) such as in McClary. Still further, one of ordinary skill in the art would be further motivated to turn to the teachings of McClary for providing such a well known time adjustment teaching since both Vargo and McClary additionally share a common focus of time adjustment according to the length of the queue of packetized data to be transmitted (e.g., see Vargo, col. 11, lines 34-52; and see McClary, paragraph 0078). Accordingly, the combined teachings of Kwan in view of Vargo, further in view of McClary teach adjusting a current packet (e.g., see Kwan, paragraphs 0243-0252 regarding pitch period and voicing calculation and paragraphs 0223-0242 regarding determining when the subsequent packet is lost, or not timely arrived) according to the adjusted length of a prior packet (e.g., see Vargo, col. 7, lines 6-26 regarding varying the packet size; see also col. 11,

lines 34-47 regarding stretching the data remaining in the buffer for packet transmission) and an arrival time of a subsequent packet (e.g., see McClary, paragraph 0078), and making the adjustment in response to the actual and expected arrival time (e.g., see McClary, paragraph 0078 regarding "adjusted according to timing information inferred from the arrival time of the packets").

Regarding claims 28-30, Kwan discloses that the voice traffic is sent from a far end in an isochronous manner, meaning one packet after the other without delay (e.g., see paragraph 0217). The estimated time of arrival of a second and/or third following packet is necessarily immediately after a received packet. Thus, the target holding time of Kwan comprises an estimated arrival time as well as an estimated worst case jitter, which meets the limitation of a latency.

Regarding claims 31 and 32, Kwan discloses expanding a play time of a received packet when the sequentially following packet arrives during its latency period by synthesizing voice until the voice decoder receives a voice packet, or a timeout period has elapsed (e.g., see paragraph 0228). This synthesizing of voice requires determining a pitch period and synthesizing voice based on the pitch period (e.g., see paragraphs 0244-0252, 0258, and 0268).

Regarding claim 33, Kwan discloses decreasing the holding time rapidly to minimize excessive end to end delay, which is accomplished by passing two voice frames to the voice decoder in one decoding interval but only one of the voice frames is transferred to the media queue (e.g., see paragraph 0220). This meets the limitation of reducing the play time of a packet. Kwan does not disclose reducing the play time by greater than a factor of two.

Regarding claim 34, Kwan discloses that two voice frames may be sent to the voice decoder, and only one may be sent to the media queue in order to compress the voice data, as mentioned above. Also, Kwan discloses stretching pitch periods to cover gaps in time due to lost packets (e.g., see paragraphs 0244-0252, 0258, and 0268). It follows that when only one frame is played, when normally two would be played, that one frame is deleted, thus a pitch period is deleted.

Regarding claim 35, Kwan discloses that the reducing of holding times may be performed in response to excessive end to end delays created by long holding times to compensate for the step of expanding (e.g., paragraph 0220).

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Justin M. Philpott whose telephone number is 571.272.3162. The examiner can normally be reached on M-F, 9:00am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on 571.272.3179. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Justin M Philpott

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4/17/06